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2. (Amended) A liquid composition as claimed in Claim 1 in which the ratio of the isocyanate groups on the diphenylmethane diisocyanate to the total number of hydroxyl groups on the hydroxyl functional compound is 0.7:1 to 3:1.

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11. (Twice Amended) A process for coating a substrate which comprises the steps of: applying a layer of a liquid coating composition consisting essentially of:

- i) diphenylmethane diisocyanate; and
  - ii) a hydroxyl functional compound which is a polyester having secondary hydroxyl groups, the secondary hydroxyl groups being the product of a reaction between a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid, the composition contains no reactive diluent which are aldimines, ketimines, or aspartic esters to a surface of the substrate; and thereafter curing the layer of coating composition.
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The amended claims do not contain new matter. The amended, independent claims use the transitional language "consisting essentially of" to exclude components which do not materially affect the performance of the claimed composition. Support for the claim amendments can be found in the specification as originally filed. Support for amended Claims 1 and 11 is found on page 4, line 3. Support for amended Claim 2 is found at page 3, line 22. Support for the "liquid" composition limitation is found in the specification in its entirety which only shows liquid compositions.

#### REMARKS

In the Office Action mailed on October 16, 2001, Claims 1-12 were pending. Claims 1-12 were rejected. The specific rejections are discussed below.

I. Rejections under 35 U.S.C. § 112, second paragraph

In the Office Action, Claims 1-9, 11, and 12 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Claims 1 and 11 were rejected because it was not clear what quantity of reactive diluent satisfies the "substantially no" language. Amended Claims 1 and 11 now read "... the composition contains no reactive diluent which are aldimines, ketimines, or aspartic esters". In amended Claims 1 and 11, the quantity of reactive diluent present is clear so the rejection of Claims 1 and 11 under 35 U.S.C. § 112, second paragraph should be withdrawn.

In the Office Action, Claim 2 was rejected because the means of representing the ratio of the isocyanate groups on the diphenylmethane diisocyanate to the total number of hydroxyl groups on the hydroxyl functional compound was confusing. As requested, Applicant has presented a clearer ratio in amended Claim 2. Amended Claim 2 represents the ratio as "0.7:1 to 3:1". The rejection of amended Claim 2 under 35 U.S.C. § 112, second paragraph should be withdrawn.

In the Office Action, Claim 11 was rejected because it was unclear what process steps were denoted or encompassed by "causing or allowing". Amended Claim 11 reads "... curing the layer of coating composition". The process encompassed by amended Claim 11 is clear so the rejection of amended Claim 11 under 35 U.S.C. § 112, second paragraph should be withdrawn.

In the Office Action, Claim 12 was rejected because the use of "obtainable" rendered the claim indefinite. Claim 12 has been cancelled so this rejection is moot.

## II. Rejection under 35 U.S.C. § 112, first paragraph

In the Office Action, Claim 3 was rejected under 35 U.S.C. § 112, first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner stated the applicants have failed to specify the type (i.e., number average or weight average) of the molecular weight or how it was determined. Claim 3 has been cancelled so this rejection is moot.

## III. Rejections under 35 U.S.C. § 102(b)

In the Office Action, Claims 1-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by WO 97/30099 or NL 9201868.

**A. The Present Invention**

The present invention is a coating composition. As stated in amended Claim 1, the present invention is a liquid coating composition consisting essentially of:

- i) diphenylmethane diisocyanate; and
- ii) a hydroxyl functional compound which is a polyester having secondary hydroxyl groups, the secondary hydroxyl groups being the product of a reaction between a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid, the composition contains no reactive diluent which are aldimines, ketimines, or aspartic esters and no hydroxyl functional component other than the hydroxyl functional comprising the reaction product of the carboxylic acid group and the epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid.

The present invention is a liquid composition. Also, the only hydroxyl functional component in the present invention is the hydroxyl functional compound made from a specific reaction -- the reaction of a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid.

**B. The Cited References**

1. WO 97/30099 entitled "Coating Composition"

WO 97/30099 discloses and teaches a coating composition. As stated in Claim 1, the coating composition of WO 97/30099 comprises a solution in a volatile organic solvent:

- (i) a polyisocyanate;
- (ii) a reactive diluent having amine groups or blocked amine groups;
- (iii) a hydroxyl functional compound which is a polyester having secondary hydroxyl groups.

WO 97/30099 discloses and teaches compositions containing a polyisocyanate, an aldimine, or a ketimine viscosity modifier and a particular hydroxyl containing component.

2. NL 9201868 entitled "Binder Composition for Powder Coatings on the Basis of a Hydroxylfunctional Polymer as a Binder and an Isocyanate Group Containing Compound as a Crosslinker"

NL 9201868 discloses and teaches a binder composition for powder coatings. As stated in the Abstract, the powder coating of NL 9201868 is based on a binder comprised of

a hydroxyl functional polymer and an isocyanate group containing crosslinker. The hydroxyl functional polymer contains more than 80% on the basis of the total amount of hydroxyl groups of secondary hydroxyl groups.

C. Traversal of the Rejections

1. Anticipation by WO 97/30099

A rejection under 35 U.S.C. § 102(b) is proper when one reference teaches each and every element of the present invention. See Hybritech Inc. v. Monoclonal Antibodies, Inc. 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir 1986).

In this case, the present invention is a coating composition which does not contain a reactive diluent. As stated in amended Claim 1, "... the composition contains no reactive diluent." Unlike the present invention, the invention of WO 97/30099 requires a reactive diluent having amine groups or blocked amine groups.

Since the WO 97/30099 reference discloses and teaches a composition having a reactive diluent, it does not anticipate the present invention. Consequently, the rejection of Claims 1-12 under 35 U.S.C. § 102(b) as being anticipated by WO 97/30099 should be withdrawn.

2. Anticipation by NL 9201868

The present invention is a liquid composition that requires a specific isocyanate-MDI- and a specific hydroxyfunctional compound -- a hydroxyl functional compound which is the reaction between a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid.

In contrast to the present invention, NL 9201868 discloses and teaches a binder composition for powder coatings. Consequently, it would be improper to hold that the NL 9201868 reference anticipates the present invention. The rejection of Claims 1-12 under 35 U.S.C. § 102(b) as being anticipated by NL 9201868 should be withdrawn.

IV. Rejections under 35 U.S.C. § 102(b)

Claims 1-4 and 6-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,379,906 ("Chattha") or U.S. Patent No. 4,322,508 ("Peng").

#### A. The Cited References

##### 1. U.S. Patent No. 4,379,906 ("Chattha")

The Chattha reference discloses and teaches a thermosetting coating composition adapted for low temperature bake applications. As stated in Claim 1, the Chattha invention comprises:

(A) a polyhydroxy oligomer having a number average molecular weight of between about 300-2,000 and comprising the reaction product of:

(i) an acid ester made by reacting

(a) a C3-C10 aliphatic branched diol, and

(b) an alkyl hexahydrophthalic anhydride, wherein (a) and (b) are combined in the reaction in a molar ratio of greater than 1:1 up to 1:2, and

(ii) a monoepoxide C2-C10 monomer, wherein said monomer is included in an amount sufficient to provide reaction of about 1.0 epoxide group for each acid group of said acid ester;

(B) a polyisocyanate crosslinking agent;

(C) 0-50 weight percent based on the total weight of (A), (B), and (C) of a hydroxy functional additive having a number average molecular weight of between about 150-6,000.

One of the reaction products used to form the polyhydroxy oligomer in Chattha must be a monoepoxide C2-C10 monomer.

##### 2. U.S. Patent No. 4,322,508 ("Peng")

The Peng reference discloses and teaches a high solids, thermosetting coating composition. As stated in Claim 1, the Peng invention, exclusive of pigments, solvents, and other nonreactive components, consists essentially of:

(A) a hydroxy functional component consisting of:

(1) between about 1 and about 90 weight percent of one or more oligoesters:

(i) having a number average molecular weight of between about 150 and about 3,000,

(ii) being at least 2 hydroxyl groups per molecule, and

(iii) being formed by an esterification reaction between a carboxylic acid and an epoxide; and

(2) between about 99 and about 10 weight percent of a hydroxyl functional copolymer having a number average molecular weight of between about 500 and 15,000, said hydroxy functional copolymer being formed from about 10 to about 50 weight percent of hydroxy functional monoethylenically unsaturated monomers selected from the group consisting of hydroxy bearing aliphatic alcohol esters of acrylic and methacrylic acids, and a remainder of other monoethylenically unsaturated monomers; and

(B) a crosslinking agent capable of reacting with hydroxy functionality of said hydroxyl functional component.

The Peng reference teaches and discloses a hydroxy functional component consisting of two hydroxy functional compounds. One of the hydroxy functional components (at least 10 weight percent) in the Peng reference must be a hydroxyl functional copolymer having a number average molecular weight of between about 500 and 15,000, said hydroxy functional copolymer being formed from about 10 to about 50 weight percent of hydroxy functional monoethylenically unsaturated monomers selected from the group consisting of hydroxy bearing aliphatic alcohol esters of acrylic and methacrylic acids, and a remainder of other monoethylenically unsaturated monomers.

#### B. Traversal of the Rejection

##### 1. Anticipation by the Chattha Reference

A rejection under 35 U.S.C. § 102(b) is proper when one reference teaches each and every element of the present invention. See Hybritech Inc. v. Monoclonal Antibodies, Inc. 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir 1986).

In this case, the only hydroxyl functional component in the present invention is the hydroxyl functional compound made from a specific reaction -- the reaction of a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid. One of the reactants used to make the hydroxyl functional compound of the present invention must be an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid. Unlike the present invention, the Chattha reference discloses and teaches a polyhydroxy oligomer formed from the reaction product of a monoepoxide C2-C10 monomer and an acid ester.

The reaction used to make the hydroxyl functional compound of the present invention is different from the reaction used to prepare the polyhydroxy oligomer in the

Chattha reference. Therefore, the Chattha reference does not anticipate the present invention, and the rejection of Claims 1-4 and 6-12 as being anticipated by the Chattha reference should be withdrawn.

## 2. Anticipation by the Peng Reference

The only hydroxyl functional component in the present invention is the hydroxyl functional compound made from a specific reaction -- the reaction of a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid. Unlike the present invention, the Peng reference teaches and discloses a hydroxy functional component consisting of two hydroxy functional compounds. One of the hydroxy functional compounds is an oligoester formed from the esterification reaction between a carboxylic acid and an epoxide. The other hydroxy functional compound is a hydroxyl functional copolymer formed from about 10 to about 50 weight percent of hydroxy functional monoethylenically unsaturated monomers selected from the group consisting of hydroxy bearing aliphatic alcohol esters of acrylic and methacrylic acids, and a remainder of other monoethylenically unsaturated monomers.

Based on the above, clearly the Peng reference does not anticipate the present invention. Therefore, the rejection of Claims 1-4 and 6-12 as being anticipated by the Peng reference should be withdrawn.

## V. Rejection under 35 U.S.C. §103(a)

In the Office Action, Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over '906 or '508, each in view of WO 96/20968 or WO 97/30099. Claim 5 has been cancelled so this rejection is moot.

## VI. Rejection under 35 U.S.C. § 102(b)

Claims 1-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by WO 96/20968.

### A. Cited Reference: WO 96/20968 entitled "High Solids Coating Composition"

WO 96/20968 teaches and discloses a composition useful as a coating composition. As stated in Claim 1, the invention of WO 96/20968 comprises 25 to 80 percent by weight

of binder components and 75 to 20 percent by weight of an organic liquid carrier, wherein the binder comprises the following separate components:

(a) 5 to 50 percent, by weight of the binder, of one or more hydroxy-functional oligoesters having at least one hydroxy group on each of at least three separate branches of the oligoester, a polydispersity of less than 2.5, a hydroxy value of between 80 and 280, and a number average molecular weight between 150 and 3,000;

(b) 10 to 90 percent, by weight of the binder, of a hydroxy functional acrylic or methacrylic copolymer with a number average molecular weight between 500 and 15,000 having a hydroxy-functional comonomer content between 10 and 50 weight percent of the copolymer and at least 10 percent of comonomers selected from the group consisting of alkyl-substituted cycloaliphatic (meth)acrylic comonomer and/or alkyl-substituted aromatic vinyl comonomers, and combinations thereof,

wherein the alkyl-substituted cycloaliphatic group on said comonomers has at least nine carbon atoms and the alkyl-substituted aromatic group on said comonomers has at least ten carbon atoms;

(c) 5 to 30 percent, by weight of the binder, of a crosslinking agent capable of reacting with both components (a) and (b) above in the presence of an effective amount of catalyst; and

(d) an effective amount of a curing catalyst.

The binder of WO 96/20968 comprises two hydroxy functional components. One of the hydroxy functional components comprises one or more hydroxy-functional oligoesters having at least one hydroxy group on each of at least three separate branches of the oligoester.... The second hydroxy functional component is a hydroxy functional acrylic or methacrylic copolymer with a number average molecular weight between 500 and 15,000 having a hydroxy-functional comonomer content between 10 and 50 weight percent of the copolymer and at least 10 percent of comonomers selected from the group consisting of alkyl-substituted cycloaliphatic (meth)acrylic comonomer and/or alkyl-substituted aromatic vinyl comonomers, and combinations thereof... The invention of WO 96/20968 also requires an effective amount of a curing catalyst.



## B. Traversal of the Rejection

The claimed hydroxyl functional component in the present invention is the hydroxyl functional compound made from a specific reaction- the reaction of a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid. Unlike the present invention, the WO 96/20968 reference discloses and teaches a binder having two hydroxy functional components. One of the hydroxy functional components of the binder (5 to 50 percent by weight of the binder) in the WO 96/20968 comprises one or more hydroxy-functional oligoesters having at least one hydroxy group on each of at least three separate branches of the oligoester... The other hydroxy functional component of the binder (10 to 90 percent by weight of the binder) in WO 96/20968 is a hydroxy functional acrylic or methacrylic copolymer with a number average molecular weight between 500 and 15,000 having a hydroxy-functional comonomer content between 10 and 50 weight percent of the copolymer and at least 10 percent of comonomers selected from the group consisting of alkyl-substituted cycloaliphatic (meth)acrylic comonomer and/or alkyl-substituted aromatic vinyl comonomers, and combinations thereof. The inclusion of "consisting of essentially" in the claims of the present invention distinguishes the present invention over the cited reference.

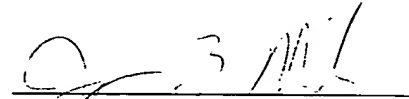
Based on the above, clearly WO 96/20968 reference does not anticipate the present invention. Therefore, the rejection of Claims 1-4 and 6-12 as being anticipated by the WO 96/20968 reference should be withdrawn.

## CONCLUSION

In light of the foregoing amendments and remarks, reconsideration and withdrawal of the following rejections is respectfully requested: (1) the rejection of Claims 1-9, 11, and 12 under 35 U.S.C. § 112, second paragraph; (2) the rejection of Claims 1-12 under 35 U.S.C. § 102(b) as being anticipated by WO 97/30099 or NL 9201868; (3) the rejection of Claims 1-4 and 6-12 under 35 U.S.C. § 102(b) as being anticipated by Chattha or Peng; and (4) the rejection of Claims 1-12 as being anticipated by WO 96/20968. Applicants

believe this application is now in condition for allowance. However, if any issues remain, please contact the undersigned attorney at the telephone number provided below.

Respectfully submitted,

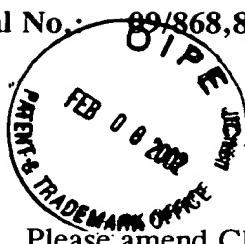
A handwritten signature in black ink, appearing to read "J. B. Miles", is written over a horizontal line.

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MARKED UP VERSION OF CLAIMS

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Please amend Claims 1, 2, and 11 to read as follows and cancel Claims 3, 5 and 12:

1. (Twice Amended) A liquid coating composition [comprising] consisting essentially of:
  - i) diphenylmethane diisocyanate; and
  - ii) a hydroxyl functional compound which is a polyester having secondary hydroxyl groups, the secondary hydroxyl groups being the product of a reaction between a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid, the composition contains[ing] [substantially] no reactive diluent which are aldimines, ketimines, or aspartic esters.
2. (Amended) A liquid composition as claimed in Claim 1 in which the ratio of the isocyanate groups on the diphenylmethane diisocyanate to the total number of hydroxyl groups on the hydroxyl functional compound is 0.7:1 to [3.1] 3:1.
11. (Twice Amended) A process for coating a substrate which comprises the steps of: applying a layer of a liquid coating composition [comprising] consisting essentially of:
  - i) diphenylmethane diisocyanate; and
  - ii) a hydroxyl functional compound which is a polyester having secondary hydroxyl groups, the secondary hydroxyl groups being the product of a reaction between a carboxylic acid group and an epoxide group comprising a glycidyl ester of a C11-C20 alkanolic acid, the composition contains[ing] [substantially] no reactive diluent which are aldimines, ketimines, or aspartic esters to a surface of the substrate; and thereafter [causing or allowing the layer to cure] curing the layer of coating composition.